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Lesions of the Bovine Fœtal Membranes.*

By J. R. Barker, Esq., M.R.C.V.S., D.V.H., Hereford.

The sterility-abortion problem continues to be of absorbing interest to general practitioners, and more particularly to country practitioners. You, who have the pleasure of carrying on your profession in North Wales, cannot fail to have been brought in contact with the many manifestations of this serious problem. In pre-war days it was my pleasure to spend a considerable time amongst you, and thus I know from experience some little of your necessities. It is readily understandable that you should express a desire, through your Secretary, for a demonstration of the clinical examination of sterile cows. Such a demonstration will certainly lead to some of you encountering disease lesions which until recently have remained unexplained, and for that matter unnoticed.

You will be aware that some of us tried to induce Professor Williams, of Cornell University, to cross the Atlantic, and give a demonstration at the Aberdeen Congress twelve months ago. Unfortunately, Professor Williams found himself unable to make the journey. This, to him, was a great disappointment, the more so since he had prepared material for that Congress, material which will surely prove a landmark in the elucidation of the sterility-abortion question. The results of his clinical investigations and those of his co-workers have been published in the *Cornell Veterinarian* of October, 1924, and April, 1925. Since these investigations concerned themselves with the observation of disease lesions particularly of the fœtal membranes, they can readily be verified. Moreover, country practitioners are the persons who can most easily verify these findings in the ordinary course of the day's work. The writer, who is in close touch with Professor Williams, has recently enjoyed the privilege of conducting an investigation into an outbreak of abortion in a self-contained pedigree beef herd. During this investigation, through the good offices of Professor Williams, I came into possession of the *Cornell Veterinarian* containing the result of these remarkable and brilliant investigations.

It is proposed to deal here with those lesions which have come directly under the writer's observation. It is also intended to produce for your inspection specimens, fresh and preserved, of as many of the lesions to be described as it is humanly possible.

*Presented to the Bangor Meeting of the North Wales Division on July 31st, 1925.

Nomenclature.

The Cornell School of observers will have to be deemed the pioneers in this cult of the observation of the lesions of the fœtal membranes. Naturally, they found themselves in contact with, to them, obsolete terms and nomenclature. In order to make themselves understood and understandable they have formulated a nomenclature which in places is a direct challenge to our previous conceptions of these terms. Every new science finds itself in the same position and has of necessity to follow the same procedure, that is, formulate its own nomenclature.

Sterility is deemed to mean that it has been found necessary for a cow to be served at successive œstral periods more than twice, in order to bring about conception.

Abortion means that a fœtal cadaver has been expelled or extracted, although such expulsion or extraction may have occurred at term.

Dystokia signifies that manual aid was applied at the time of abortion or birth to secure delivery of the fœtus.

Premature Births include all births (wherein the young are delivered breathing) occurring in the cow prior to the 280th day of gestation.

Retained Membranes indicates that the fœtal membranes have been detained within the uterus over six hours following the expulsion or extraction of the fœtus.

Normal Birth indicates for the cow that the duration of gestation has not been less than 280 days, moreover that the fœtus was expelled promptly and without assistance, the young animal breathed after expulsion, and its membranes were expelled within six hours after birth.

The term of *Body of the Uterus* virtually disappears, since these observers have failed to find on dissection any part of the uterus to which this name can be applied. The practitioner can easily verify this conclusion by dissecting out gravid and non-gravid uteri obtained from the slaughter house.

These terms have been found to provide a means for expression and will no doubt, come to be accepted, not without discussion, but essentially as they stand.

Development of the Fœtal Membranes.

Before a clear understanding of the lesions found on the fœtal membranes can be had, it is necessary to have some idea of embryology and the development of the fœtal membranes. Descriptions of the development of the amnion, allantois and chorion have always perplexed the writer and after an extensive search

through literature it would appear that embryologists themselves hold diverging views. Several embryos complete in the fœtal sac have been dissected, and for the purposes of this description the accompanying photograph will serve readily as a guide. The uterus of a pregnant cow slaughtered at the abattoir was obtained and carefully opened on the *post-mortem* slab. After the fœtal cotyledons had been detached from the maternal structures, a blunt dissection of the outer sac was undertaken. This outer sac with its cotyledons and blood vessels is shown lying loose between the two arms of the non-vascular allantois.

Conception takes place normally in the fallopian tube and soon afterwards segmentation begins. This unprotected morula passes through the ostium internum propelled by the ciliated epithelium and comes to rest on the mucous membrane of the uterine cornu of the same side as the functioning ovary, midway between the ostium internum of the fallopian tube and the os uteri internum of the cervix. As a result of segmentation there is quickly formed an embryonic area inside a layer of ectodermic cells (the future amnion) the whole being again enveloped in another layer of ectodermic cells, the future outer layer of the chorion. This stage is known as the blastodermic vesicle, and connecting the embryonic area with the outer layer of this vesicle is the blastodermic pedicle, the future umbilical cord. The embryonic area undergoes rapid development and (as an evagination of the hind gut of the embryo) a tube is pushed out along the pedicle. Branching left and right this tube (the future non-vascular allantois) extends across the amnion, and eventually occupies the whole of the space between the poles of the amnion and the chorion. Simultaneously with the formation of the allantoic tube, blood vessels are formed in the pedicle, and extend along the floor of the vesicle to become the allantoic vessels, again branching left and right.

The accompanying photograph was taken at approximately ten weeks after conception. The fœtus (2) can be seen within the amnion (1) which is distended with the amniotic fluid. The non-vascular allantoic tube (3,3′ 4,4′) showing at the hilus of the amnion where the umbilical cord emerges, passes upwards, branches, and one arm (3) runs across the amnion towards the cervical end of the cornu, and another arm (3′) towards the ovarian end of the gravid cornu, after the manner of a ' T ' with a curved portion thus [, the added curve being within the cord (8) and is a continuation of the urachus. At the poles of the amnion this tube, clothed with the allantois chorion broadens out and extends along the uterine cornu towards the cervix and enters the non-gravid cornu and is attracted to the apex of this cornu. At the other pole of the amnion a similar procedure takes place, the other branch of the cross piece of the ' T ' broadens out, and clothed with the vascular layer of the chorion extends towards the apex of the gravid horn. Between the non-vascular allantois, which is full of allantoic fluid, and the vascular chorion is a jelly. This is clearly shown in the plate as a fluting at the edges outside the allantoic tube beyond (4′).

The True Placentation.

In ruminants the placentation is cotyledonary. The outer layer of the fœtal membranes, which is in direct contact with the endometrium of the uterus, early forms villi which enter the crypts of the maternal

Fœtal Membranes, Partially Dissected, Bovine. Gestation approximately 10 weeks.

1. Amnion c. amniotic fluid, showing epidermal thickenings.
2. Fœtus.
3,3′. Branching non-vascular allantois extending towards poles of amnion.
4. Arm of allantois proceeding to cervix and apex of non-gravid cornu.
4′. Arm of allantois proceeding to apex of gravid cornu.
5,5′. Vascular chorion.
6,6′. Necrotic tips.
7,7′. Allantoic vessels of chorion.
8. Umbilical cord proceeding towards 3′.
9. Fœtal cotyledons.

cotyledons. Each fœtal cotyledon is composed of numerous villi projecting into these crypts. The villi are highly vascular, and by a process of osmosis an interchange of blood fluids takes place between the maternal capillaries and the fœtal villi. The fœtal cotyledons are arranged in four rows, two ventral and two dorsal. The two ventral rows are separated by the allantoic vessels which normally are to be found running inside the chorion along the floor of the uterine cavity. The fœtal cotyledons number over 100.

Inflammatory Lesions.

The chorion, both the placental and interplacental, often shows signs of having been the site of true inflammatory processes.

The *Cotyledonary* tufts or villi are darkened in colour and often brownish. They become engorged and swollen and a corresponding increase in size of the maternal cotyledons takes place. The intercotyledonary areas become hæmorrhagic, darkened and frequently of a dark bluish colour. These patches are frequently extensive and sometimes involve the whole of the uterine surface of the chorion. The foregoing lesions were encountered in heifers in the outbreak of abortion already mentioned, and proved exceedingly difficult when an attempt was made to remove the membranes manually.

Hæmorrhages.

Intra-placental hæmorrhages have been met with. When extensive they lead to the entire separation of the fœtal membrances from the maternal structures. Death of the fœtus takes place. This is the condition known as desiccation of the fœtus. Recently whilst examining a cow that had not been noticed in œstrum for over twelve months this condition was met. The cow was in good condition and was slaughtered. An examination of the uterus revealed a desiccated fœtus enveloped in the membranes, some few of the cotyledons at the ovarian end of the chorion were not detached but were small, about the size of a shilling. The whole was surrounded by a dark brown sticky mass the remnants of the hæmorrhage. More often the hæmorrhages are less complete and a dark brown patch is observed where ordinarily the tufts of the cotyledons should be. The hæmorrhage causes a separation of the tufts from the crypts and thus the former cease to function.

Necrosis.

The most frequent lesion encountered is necrosis. An important feature is the early stage in gestation at which necrosis visible to the naked eye is established. The specimens of complete aborts to be exhibited, one at one month and the other at three months, show extensive necroses.

Necrotic Tips.—The most frequent site of the necrosis is at the tips of the chorion, always involving the non-vascular allantoic tip as well. These are shown at (6,6′) in the plate. In early gestation these tips appear white, later they are leathery and yellow.

Necrotic Cotyledons.—In almost all cases of abortion, the placental cotyledons show more or less extensive areas of necrosis. It does not appear necessary for a previous inflammatory reaction to have preceded this necrosis, as several cotyledons may show fairly healthy villi alongside extensive necrosis. The villi attacked seem to exhibit at first a brownish yellow appearance and later a definitely yellow colour is established. The attacked villi are thickened, lose the feathery appearance, are non-vascular and stumpy. There are thus revealed fœtal cotyledons showing necrosis at the periphery and extending to the centre. In amongst this yellow mass are bright red functioning villi.

Necrotic Intercotyledonary Chorion.—Patches of the interplacental areas, varying in size, become involved in necrosis. Membranes sometimes show lesions that suggest the confluence of several smaller necrotic areas to form one large one.

Necrosis of the Allantois.—The necrotic tips of the chorion invariably involve the allantoic tube or non-vascular allantois. The allantoic isthmus is also a seat of necrosis, and frequently large areas of white necrotic tissue, with a dull brown or drab centre are seen.

Necrosis of the Amnion.—The inner surface of the amnion is often yellow and leathery, indicating necrosis. In such cases the amniotic fluid is turgid, indicating fœtal sepsis and diarrhœa.

Œdema of the Chorion.—An œdematous condition of the chorion often is found. In some cases the œdema is confined to the sub-cotyledonary chorion, so that when removing such an afterbirth the fœtal cotyledon appears three or four times as bulky as the maternal cotyledon from which it was detached. More often, when œdema is present, the whole of the chorion is involved and may reach a thickness of one inch. In such cases the jelly between the non-vascular allantoic tube and the vascular chorion is increased.

Lesions of the Amnion.

Epithelial Thickenings.—The amnion shows in a few cases epithelial thickenings. In one of the specimens to be shown these take the form of blebs or blisters like those to be found on sea-weed.

Plaques.—By far the most frequent lesion of the amnion is the presence on the epidermal surface, that is the one lying nearest the fœtus, of whitish areas commonly called plaques. These plaques are of two kinds. (1) Flat and lying wholly upon the surface of the amnion. These appear pearly white and about the size of a threepenny piece. These have been encountered in heifers carrying the first calf. (2) With raised edges after the manner of a saucer attached to the amnion at the base. The plaques are hard to the touch and are composed of stratified squamous epithelial cells.

Lesions due to Faulty Development.

The fœtal membranes are entirely dependent upon a healthy functioning endometrium for their full and healthy development. Consequently when the endometrium is diseased or has been destroyed by disease of a former pregnancy, certain aberrations of development of fœtal membranes occur.

1. *Failure of non-gravid arm to develop.*—If the whole of the non-gravid endometrium has lost its function, the allantois and its covering chorion are not attracted into this cornu, and consequently there is but a protuberance of naked membranes extending into the cornu.

2. *Flask-shaped invagination of naked apex.*—If the apex of the non-gravid endometrium only is damaged and non-functioning, the apex of the chorion

does not form villi, remains without cotyledons and is repelled towards the cervix. This repulsion causes an invagination of the whole of the chorion as far as the position where fœtal and maternal cotyledons are in evidence. In this cavity at the apex is uterine debris and frequently a yellowish brown inspissation like caramel. The invaginated portion of membrane shows a necrotic tip and when evaginated and opened the chorion here is transparent. This is clearly shown in one of the specimens.

Adventitious Placentæ.

In cases where faulty development of the membranes has taken place, and in some others also, there is found adventitous placentæ. These adventitious placental out-growths are regularly found on the chorion in all situations, but are often near the cervix. They are the subject of the disease processes already outlined, namely, inflammation, necrosis and frequently calcification. This is a lesion often encountered when removal of the membranes is undertaken and erroneously described by some as of tuberculous origin.

This is not intended to be a complete résumé of the lesions described by Williams, but only those which have been encountered by the writer and of which specimens can be produced. If this serves to induce anyone to desire to see the complete studies as described by Williams it will have served one of its purposes.

I am indebted to Professor Williams for the literature, and, as always, for his kindness in forwarding information, and to Professor Glynn for preparing the more important specimens. Also my best thanks are due to William Jenkins, Esq., Westhide Court, Hereford, for allowing the bulk of the material, which forms the basis of this article, to be examined.

Sewage Pollution of the Drinking Water for Cattle and its effect on them.

By A. Levie, F.R.C.V.S., County Veterinary Officer, Derby.

The Public Health Act, 1875, orders that Local Authorities shall provide sufficient sewers and keep them in repair, and they must purify their sewage before discharging it into any natural stream. The Rivers Pollution Act of 1876 says that solid or liquid sewage or any solid matter shall not be discharged into streams.

Sewage is water with certain refuse substances in solution and suspension. These consist of:—Fæces and urine of human beings, farm and other animals; house waste; grease, soap of diverse kinds, and foul matters from the surface of the body and from clothes and general washing. Sewage may also contain special pollution from manufacturing processes.

The actual bacterial contents of sewage vary enormously, since sewages vary so greatly in strength and the extent to which they become mixed with surface and other water. Approximately the number of bacteria present in sewage ranges from one to one hundred millions per c.c. (15 to 18 drops).

The organisms used as indicators of sewage and excretal contamination are Bacillus Coli Communis, streptococci and spores of Bacillus Enteritides Sporogenes; and they number on an average in one c.c. of sewage 100,000 B. Coli, 10,000 streptococci, and 100 to 1,000 spores of B. Enteritides Sporogenes.

The following table shows the approximate number of these per gramme of fæces immediately after passing out of the bowels:—

SOURCE	B.Coli Communis	Streptococci	B. Enteritides Sporogenes Spores
	Approximate number per gramme (15½ grains) of fæces		
Human ...	Over 100 million	Over 100 million	Over 5 million
Horse ...	Over 1 million	Over 1 million	Over 500
Cow	Over 1 million	Over 1 million	Over 500
Pig	10 to 100 million	Absent	Over 500,000
Sheep ...	10 to 100 million	10 to 100 million	10 to 100

All three groups of organisms are abundant in crude sewage. The actual numbers found will of course vary greatly with the strength of the sewage.

Organisms of the B. Coli group do not occur in pure water and under ordinary conditions they do not multiply to any extent outside the animal body. They should be absent from 100 c.c. of deep water supplies and from 10 c.c. of surface water; and the same may be taken as a standard for streptococci. Opinion is not united as to the value of the B. Enteritides Sporogenes as an indicator of pollution.

The chemical composition of sewage is an index to its bacterial contents, but the latter are of the greater importance. Indeed I attribute the primary and disturbing factor in sewage to its bacterial contents and in particular to the B. Coli, streptococci, B. Enteritides Sporogenes and their by-products or toxins. A cow drinks on an average six gallons of water per day, which, if containing 1,000 B. Coli Communis per c.c., would furnish 30,720,000 of this kind of bacteria in addition to other organisms and their toxins present in sewage. We say such water is highly dangerous for cattle to drink.

Observations on twenty Derbyshire herds of cattle drinking sewage polluted water have revealed to me that it has the following baneful effects on them, viz.: loss of appetite and condition, unthriftiness, drowsiness, weariness, scouring, and, in some animals, vomiting. Occasionally a swelling appears in the region of the throat which on examination proves to be septic in character. Cattle kept solely on water containing a high proportion of crude sewage will die in the course of about six months.

When cattle showing the above symptoms—without complications—are allowed clean water to drink, they improve in health. The period required for them to recover is in proportion to the length of period they have been drinking sewage polluted water. Generally it has taken from three to six months for them to recover. Of course some animals are more susceptible to the influences of sewage than are others.

* Reproduced from the July issue of *The Derbyshire Young Farmer.*

The best practical illustration to ascertain if a high percentage of sewage in the drinking water is baneful to cattle is to allow them to drink the water for two or three weeks, when they will purge. We already know that foals eating their mother's dung purge badly, and calves drinking milk contaminated with their droppings scour. I for that reason expect sewage passing through the alimentary canal of cattle to set up a similar condition in them. I should be surprised if it did not.

The fact that cattle drink sewage-polluted water is not evidence that it is harmless to them, but rather it suggests that their digestive system is deranged, probably suffering from acidity, which is partially counteracted by the alkalinity of the water in question.

Now as to the relation between sewage and other diseases in farm live stock: I am satisfied that the toxins given off by the three principal and other bacteria in sewage, when passing through the digestive system of cattle, have a baneful effect on them by lowering their resistance to the invasion, planting and action of disease-producing bacteria. Hence cattle regularly drinking sewage-polluted water are more susceptible to the causes of such diseases as tuberculosis, Johnë's disease, and contagious abortion, than are animals drinking clean water. I believe many of the ill-defined disturbances we meet with in farm live stock can be attributed to the toxins of sewage in the drinking water.

I do not suggest that sewage of itself would cause these specific diseases, but do contend that it has a powerful predisposing influence; and, given specific organisms in the polluted water the cattle drink, an ideal opportunity occurs to plant themselves in the tissues of their host or victim and flourish therein.

Status of Irish Doctors.

A Free State Decision.

(Reprinted from *The Times*).

"The announcement of the Free State Government's intention to establish a separate medical register for the twenty-six counties has provoked grave alarm throughout the medical profession and in the universities. The announcement which was made last week by President Cosgrave in confirmation of newspaper reports was wholly unexpected.

"As a Senator, a medical doctor, who has been in touch with all the negotiations, said last night it came 'like a bolt from the blue.' When it was discovered nearly two years ago that the authority of the General Medical Council in this country had lapsed automatically as a result of the Anglo-Irish Treaty there was something like panic in Irish medical circles. This was removed by the friendly attitude of the General Medical Council, which pointed out that the rupture could be repaired by amending legislation in the Imperial and Free State Parliaments, and expressed its entire readiness to concur in such legislation. The Irish Medical profession was, as it is now, unanimous in its anxiety to retain the enormous advantages of the British Medical Register, and nobody supposed that the Free State Government would raise the slightest difficulty. To everybody's surprise, however, it moved slowly and reluctantly. The Bill which it introduced in the Free State Parliament provided only for the re-establishment of the British Medical Register for a period of twelve months, and was passed only in the nick of time. The twelve months will lapse on February 23rd next.

"During recent weeks there have been disquieting rumours concerning the Free State Government's intentions for the future, and the Irish Medical Association, and other medical bodies, as well as the universities, have been urging Ministers to safeguard the profession's interests once for all by legislation which will re-establish the British Medical Register permanently in this country. Such legislation, if it is to be effective, must be passed between next November, when Parliament reassembles, and February 23rd, 1926. Now comes Mr. Cosgrave's startling announcement. He stated yesterday that the Executive Council had decided 'not to seek the continuance of the United Kingdom arrangement, whereby the medical profession of Ireland, with certain representation, was controlled by the British General Medical Council.'

Government's Position.

"Mr. Cosgrave explained his Government's position in the following words:—'That an important profession within the State should have its centre of gravity and disciplinary head-quarters in the capital of another country is felt to be so incompatible with our constitutional status that we must be prepared to face whatever minor and temporary disadvantages may accrue from the cessation of that arrangement.' Mr. Cosgrave, while admitting that disadvantages might accrue from the new arrangement, declared that misdirected zeal on the part of the advocates of the old arrangement would be to blame if parents and students should feel misgivings about the future status of the medical profession in the Free State. 'The Executive Council,' he added, 'anticipates no serious reactions from the establishment of a self-contained and self-controlled medical authority in this country,' and he concluded that the new settlement would be a matter for negotiation between the Free State and Imperial Governments.

"The Free State Government has done many controversial things, but this decision is by far the most serious challenge which it has yet offered to educated public opinion. Among all classes the privileges of the British Medical Register are deeply and rightly believed in in this country. These privileges have conferred on Irish doctors a status superior to that of Colonial doctors, and have opened to the Irish medical profession the immense field of the British Empire, and the British Medical Services, military and civil, in all parts of the world. At the present moment the Naval, Army, and Air Force

medical services are manned largely by graduates of the Irish medical schools. Moreover, at least 8 per cent. of Irish students are educated for export. It is calculated that to-day the Free State can find employment for not more than twenty of the 150 doctors who graduate annually from its medical schools. Hardly any educated Irishman believes that any arrangement that the Government may be able to make with the British Government will maintain the existing privileges intact. It is, indeed, almost certain that some overheated instinct of political independence in certain members of the Executive Council is driving the Council into the greatest blunder of its career.

PROBABLE RESULTS.

"Briefly, the probable results of any diminution of the status of Free State doctors will be as follows:—A large number of boys intended for the medical profession will be sent immediately to English and Northern Irish schools. There will be an exodus of Free State medical students to London, Edinburgh, and Belfast. The medical schools of Dublin and Cork will receive a staggering blow. Dublin University and the National University will suffer heavy losses of money and prestige, and, of course, a new barrier will be erected against the ultimate unity of the two Irish States. No doubt the medical profession and the universities will organise their forces to resist this peril, and they will find strong support in both Houses of the Free State Parliament. One fears that the Government is acting without any real appreciation of the weighty issues which are involved in its decision. In particular this latest move must alienate from it the slowly-won confidence of the ex-Unionist minority in Southern Ireland."

How Serious Diseases are no doubt Spread.

By GEORGE ELLIS, M.R.C.V.S., Glossop.

In the Annual Report (1924) of our Medical Officer for the Borough, who is also Medical Officer for the Rural District Council, he states that he carried out an investigation regarding the slaughter houses. The investigation reveals a state of affairs which is far from satisfactory; broadly speaking, the number of slaughter houses (19) is too great to allow the sanitary inspector adequately to supervise them.

"The number of slaughter houses being used at present is 19, therefore the average number of inspections is 23. This means, roughly, that one half only of the meat exposed for sale in the borough is inspected. With nineteen slaughter houses in the various parts of the borough it is not possible (unless other duties are neglected) for him to do more than he is doing at present. It is possible that the new Draft Regulations put into operation may save a few waste journeys, but we cannot, even if these are adopted, have the inspection desirable."

The sanitary inspector, who is also milk and meat inspector, reports under the Dairies, Cowsheds and Milkshops Order, that "owing to the serious outbreak of infectious diseases in the borough and the time taken up by me in dealing with it the number of milk samples taken has been less." The sanitary inspector also states, "I am sorry to see the Tuberculosis Orders of 1913 and 1914 are still inoperative."

The writer suggests to the readers of this journal that medical officers' reports should be accompanied by the veterinary officers' reports, also that "inspection of cattle" should read "veterinary inspection," and the veterinary officer be placed under the Public Health Act. This would give the veterinary officer power to inspect the cattle, and then he might see animals he might suspect to be suffering from tuberculosis or any contagious disease. I believe that a veterinary inspector has no power in his own district to inspect unless he suspects disease. The cattle owner will take very good care not to bring any veterinary officer near any that he may have any reason to suspect, and if the medical officer or health committee (very often composed of farmers) wish, they can also avoid the very necessary veterinary inspection. The orders should read *must* not may.

It is not difficult to understand what will happen if the sanitary inspectors, who are also the milk and meat inspectors, are extra busy with an extensive outbreak of diphtheria, scarlet fever or small pox. Are these the right persons to examine milk or carcases of beasts for the food of man after having been in contact with any infectious disease?

All cases of tuberculosis or any other contagious disease should be reported under the Contagious Diseases of Animals Act whether found in slaughter houses or dairy farms. Disease is far too serious a matter to be left in the hands of many of the health committees, and fatal cases of meat poisoning have ensued from consumption of meat from carcases affected with disease.

The Ministry of Health should receive a Veterinary Report (direct) of all dairy cows, milk and veterinary inspections of animals, and carcases slaughtered for human consumption, in order that any discrepancy may be removed for the benefit of the health of the people.

I think it would not be out of place if veterinary surgeons asked the Town Clerks for the medical officers' and also the sanitary inspectors' reports.

METHOD OF BRACKEN ERADICATION.

"Acting upon the knowledge that the natural food of pigs consists of roots, a Grove farmer has evolved a clever scheme for employing them in a process of bracken eradication on his property. In addition to ridding his land of this detestable fern, he is able to keep large herds of swine which only require to be 'topped off' for killing after serving their purpose in dealing with the bracken.

"This farmer, Mr. Bruce Thompson, of Anakiwa, told a representative of the *Marlborough Express* that he had been interested in reading about the great losses to farmers in the North Island caused by the grip which bracken fern has obtained upon the land. He had every sympathy with a producer who was suffering from bracken-infested land, for, from his own experience, he knew only too well what it would cost a man.

"Bracken rendered much excellent land useless, declared the speaker, and in many ways it was an expensive pest. For instance, land badly infested was almost useless and was a dead loss to the farmer. If that land was to be cleared and made useful, the eradication, carried out in the accepted fashion, would cost a lot of money. If the danger constituted by bracken was ignored and stock was put upon it to graze, as often as not there was a loss of stock through death.

"He had had cows die on bracken-bearing land, said Mr. Thompson. The animals were often in fine condition, and he had been deeply puzzled as to what was at the root of the mortality. He finally opened up a dead beast, and had been amazed with the discovery he had made. It seemed the cow had been eating bracken and the fine, brown-coloured down, or dust, off the stems and fronds had found its way down the throat and into the stomach. There it had collected and become rolled together in little pellets and caused the animal's death. This taught him what a real evil this fern was, and he decided to eradicate as much of it as possible.

"After much cogitation, Mr. Thompson evolved a shrewd system for dealing with bracken. Knowing the partiality pigs have for root foods, and having noted at different times the extensive "rootings" of wild pigs on bracken-clad hill slopes, he resolved that he would make pigs work for him. He purchased a herd of pigs, enclosed it in a small area which he fenced for the purpose, and there he left it. The pigs rooted diligently to unearth their meals, and after a time it was noted that the bracken was practically exterminated, the plants having been torn up and denuded of roots.

"Having accomplished his end as far as that area was concerned, Mr. Thompson shifted the pigs into another small paddock. He then raked off and burned the dead fern and then sowed a crop of turnips in the recently vacated paddock, and later oats. Both crops did exceedingly well. The first phase of the system enabled pigs to be kept very cheaply, and they usually came out of the small paddocks in fair condition and only required finishing off for market. The next phase saw the production of excellent crops of oats and turnips which provided fine fattening or milking seed for stock. After this crop had been used up the clear areas were sown with pasture grass, and the result was entirely satisfactory.

"Of course, Mr. Thompson admitted, the process of eradication might be considered slow, but, as in his case, where there was a steep hillside which would otherwise remain useless, it was quite worth while. The great advantage about the scheme was that the pigs ordinarily cleaned up every vestige of root, and the bracken had no chance to grow again.

"Another farmer takes a grubber and plants a few peas at intervals through the patch from which the bracken is to be eradicated. Once the pigs find the peas they continue rooting until all is turned over. Of course, you must not feed the pigs too well, or they will not work."—*The New Zealand Dairyman.*

Animal Experimentation in 1924.

The Home Office report on experiments on living animals in 1924 (No. 154, Stationery Office, 1s. net), just published, states that the number of persons holding licences for experiments was 1,042, but that of these 239 performed no experiments during the year. The total number of experiments made was 177,815, or 43,032 more than in the preceding year. The whole of that increase is accounted for by the larger number of simple inoculations and similar experiments performed without anæsthetics, and there was a decrease of 893 in the number of operations performed with anæsthetics.

Dealing with the latter class the report says:—"Of the 9,162 experiments, 1,109 were simple inoculations into the skin of guinea-pigs, which were anæsthetised in order to keep the animals motionless during the introduction of a minute quantity of the fluid to be tested for the purpose of standardisation. Of the remaining 8,053 experiments in this table, comprising all the cases in which any serious operation was involved, 4,234 were performed under licence alone, or under Certificate C, and therefore came under the

(*Continued at foot of next column.*)

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22nd August, 1925.

CLINICAL REPORT.

Some Clinical Cases from India.

By Captain J. Bell, R.A.V.C., Sargodha.

Subject.—A seven-years-old riding camel, belonging to an Indian cavalry regiment.

History.—Some weeks previously the camel was bitten on the scrotum by a companion. This is a common occurrence amongst love-sick camels. The swollen scrotum, resembling a football, protruded backwards well beyond the anus. Two bold incisions had been made by some person, evidently with a view to relieving the congestion. These were discharging pus freely. On manipulation, the left testicle was found greatly enlarged. It was decided to castrate.

Operation.—The camel, in a sitting posture, was firmly secured by means of two ropes. Chloroform was administered in the usual way. After receiving 3 oz. the camel was well anæsthetised. In order to better expose the seat of operation, the patient was turned over on the near side. An incision was made and the right testicle removed. The actual cautery was used. The testicle weighed 10 oz. The left testicle presented a more formidable proposition and

(*Continued from previous column.*)

provision of the Act that the animal must be kept under an anæsthetic during the whole of the experiment; and must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic."

It is added that in no case was a cutting operation, more severe than a superficial venesection, allowed to be performed without anæsthetics. During the year 8,083 experiments were performed by 12 licensees engaged in cancer research, and 7,754 of these experiments consisted of inoculations into mice or the exposure of animals to radiation. Among the places registered for the carrying out of experiments is a sewage farm where the character of effluents is tested by their effects on the health of fish.

made one consider. An incision about 9 inches long was made. This had to be lengthened at both ends before the inflamed testicle could be exposed. The testicle was attached to the walls of scrotum by strands of fibrous tissue. These were easily broken down and the testicle and a small portion of cord drawn out. The testicle presented the appearance of a large fibroma. The cord also resembled a tumour and was as thick as a man's wrist. It was decided to use a ligature, but as the ordinary ligature was not considered strong enough, a piece of tape was procured. The cord was severed by the actual cautery, but in spite of the cauterisation and the ligature there was profuse hæmorrhage. This was checked by means of three bull dog forceps and one Spencer Wells forceps, all of which were left in position. The scrotum was swilled out with a solution of lysol. This testicle weighed 64 ozs. The following day the camel was off feed and very dull and there was considerable swelling, but it was not considered advisable to interfere with the wound. The next day the camel was still off feed and had a temperature. There was considerable swelling. The camel was secured as before and all forceps removed, when there was no sign of hæmorrhage, A little pus was found in the scrotum, and the wound was thoroughly cleansed with eusol. This was repeated three times a day for a week. In less than a month the camel was discharged. Six months afterwards signs of operation were scarcely visible.

* * * *

Subject.—A two-years-old colt by a T.B. Australian out of a C.B. mare.

History.—Some weeks ago the colt was admitted to hospital in very poor condition. He was subject to periodic fits of coughing, but fed well, though most of the food was returned through the nostrils. Although the temperature was normal, the case was diagnosed as laryngitis. Examination of the mouth and throat by means of a mouth gag revealed nothing. As the colt did not respond to the usual treatment and was gradually becoming more debilitated each day, it was decided to anæsthetise and explore. After anæsthetisation, a hand was with great difficulty passed over the tongue as far as the pharynx. Here the cause of the trouble was found—a small polypus on the floor of the pharynx. A piece of wire was passed through a metal tube and after many attempts the polypus was snared and pulled forward far enough to enable the chain of an écraseur to be passed round the pedunculated portion. When this was accomplished the removal of the tumour was simple. After this the colt never looked back, but put on flesh daily and in two months' time was a picture of health.

* * * *

Subject.—A six-year-old light draught horse belonging to a signalling company.

History.—The horse was found in the stable one morning suffering from complete fracture of symphysis of the lower jaw. From the blood and portions of hair adhering to manger and one of the cross bars, it was evident that the horse had wedged his muzzle between the end of the manger and the end of the cross bar. In his efforts to free himself the above fracture occurred.

Treatment.—The wound was thoroughly cleansed and the parts brought into position. Wire was passed round the incisor teeth with a view to keeping parts in contact. The horse was put on soft diet and the wound thoroughly cleansed with eusol after each meal. Although strict antisepsis was adhered to the case did not do well. The parts became displaced and wound became septic. The wire was removed and the wound washed with solution of hydrogen peroxide, after which the edges of the wound were curetted. Two holes were drilled through the body of the bone on either side of the mesial line and two wire sutures inserted. The same routine as previously was carried out. The wound remained healthy and in three weeks' time the two portions of the bone had knitted. In six weeks' time the sutures were removed. Three months later the horse was doing his ordinary work and there was little evidence of fracture having occurred.

* * * *

Subject.—A twelve-year-old bullock employed on the farm chiefly for ploughing.

History.—The bullock was admitted to hospital very lame in the near fore. On looking through records it was found that this was his third visit to hospital within a year. On each occasion he was lame on same leg and on each occasion the diagnosis was "shoulder lameness." The bullock had difficulty in drawing the limb forward, and as nothing else could be found the diagnosis was not altered. The animal was rested, but after six weeks there was no improvement, and it was decided to destroy.

A very careful *post-mortem* examination of the affected limb was made. All the joints were quite healthy. The bones were boiled down and on the inner surface of the acapula an exostosis was found. There was no sign of fracture having occurred at any time. The exostosis was about the size of that of a chestnut.

The Ministry of Agriculture has published Volume VIII. of the Register of Dairy Cattle, with authenticated milk records, for the year ended October 1, 1924, price 1s. net, post free. This is a very valuable record of dairy herds, with particulars relating to the milking performances of individual cows. No owner of a milking herd can afford to be without so sound and trustworthy a work of reference. The milk-recording system is steadily increasing in favour and practice, and the growth of the process is reflected in the contents of this official publication.—*The Times.*

Cheshire F.U., at its last meeting, made a protest against the growing practice of using fictitious ownership names for the purpose of selling cattle at auction marts, and decided to communicate with the Auctioneers' and Surveyors' Institute. The matter was also discussed at a meeting of the Rutland F.U., and a committee was appointed to seek the co-operation of the auctioneers in discouraging a practice which was felt to be detrimental to the interests of the agricultural community.

DIVISIONAL REPORTS.

Royal Counties Division.

MEETING AT THE ZOOLOGICAL SOCIETY'S OFFICES.

At the invitation of the President (Professor G. H. Wooldridge) this Division held a most interesting meeting, followed by a visit of inspection to the Zoo, under his guidance—at the offices of the Royal Zoological Society, Regent's Park, on Friday, July 31st, 1925.

Unsettled weather affected the attendance somewhat, but those present were well rewarded for their effort by the excellence of discourses on acariasis in the monkey, by Mr. F. Martin Duncan, and on congenital malformations of the kidney and obstruction of the intestine in a tiger, by Dr. Scott, while the ladies had the resources of the Zoo for their entertainment during the meeting and subsequently when, following tea as the guests of the President, the whole company were enabled to get "behind the scenes" in regard to some lesser known but most interesting features of activity therein. In this connection, the sanatorium and laboratory attracted much attention, while the visit to the aquarium proved to the full the truth of the President's assertion that this fascinating addition to the Zoo's attractions is one of the sights of London.

The following were present, in addition to the President. *Members:* Messrs. Bell, Coleman, Collett, Dunkin, McIntosh, Simpson, S. H. Slocock, S. L. Slocock, F. J. Taylor, Wilkinson, F. W. Willett, J. Willett, and Catmur (Hon. Secretary).

Visitors: Mr. F. Martin Duncan, F.Z.S., Dr. H. H. Scott, Mr. E. S. Martin, and Major Nicholl.

Ladies: Mesdames Wooldridge, Catmur, Dunkin, King, Simpson, Taylor, and F. Willett.

The minutes of the previous meeting, having been published in the *Record*, were taken as read and were signed as correct.

The PRESIDENT: The formal business of the meeting I think we will, with your permission, adjourn till a little later in the proceedings, in order to take advantage of the very kind offer of Dr. Scott and Mr. Martin Duncan to show us, and address us upon, some very interesting exhibits which they have here to-day. (Applause.) These gentlemen have both pressing engagements and desire to leave early. I will ask Mr. Martin Duncan if he will give us his demonstration.

Mr. MARTIN DUNCAN, F.R.M.S., F.R.P.S., exhibited a section of lung of *Macacus rhesus* showing a longitudinal section of the acarid *Pneumonyssus foxi* Weidmann. In the course of his remarks Mr. Duncan said that he thought it would interest them that afternoon to see a number of acari from the lungs of a number of a consignment of monkeys acquired for pathological work in 1918. Several were allocated to the Lister Institute, where he was working with Dr. Arkwright on trench fever, and one was used for inoculation purposes. That particular monkey had died, and on *post-mortem* examination the lungs displayed rather the appearance of old tuberculous lesions—small, yellowish-white patches were observable on the surface of the lungs. On cutting down into those vesicles, he was reminded of the nursery rhyme of the pie crust and the blackbirds, because immediately a number of small white mites made their appearance. On opening the vesicles one found small cavities about one-sixteenth to four-sixteenths of an inch in diameter, and these were filled with mites in all stages of development. Subsequently he was able to examine the lungs of other Rhesus monkeys from the same consignment, and which had died in the Zoological Society's Gardens, and these had all exhibited the same condition of acariasis. He found one or two males only—they seemed far less numerous than the females. Apparently these mites were able to pass their entire life history in the lungs. He had not been able to go any further into the matter, i.e., to trace the answer to the important question which was, of course, how the mite, in the first instance, found entry into the lung. Because the mite, in its adult stage, was a fairly large thing—while the larva measured only one-fiftieth of an inch, the adult female measured one-fifth of an inch. Of course they found acariasis in birds, but he had been able to trace only two or three recorded instances of the existence of acariasis in the lungs of monkeys. He thought that was because the existence of that condition had probably been overlooked for the reason that the surface appearance of the affected lung so closely resembled that containing old tuberculous lesions.

The PRESIDENT: I am voicing the opinion of you all when I say how very pleased we are to see these specimens and photographs which Mr. Duncan has so kindly shown and explained to us. You will agree with me that this demonstration is of unusual interest, because of the almost unheard-of occurrence of these acari in domesticated animals in this country, or perhaps one should more correctly say, the discovery of them, because the general character of the lesions may have been misunderstood. As we know monkeys are so subject to tuberculosis that it is quite possible that a number of cases which have been put down as tuberculous may have been cases of acariasis. I have seen acari in the air sacs of birds, but not previously in mammals. I should like to hear what views other members have in connection with this.

Major DUNKIN: I should like to ask, in connection with the way in which the acari get into the lungs, as to whether there was any suggestion of acariasis of the skin.

Mr. DUNCAN replied that there was no acariasis of the skin, and that he had not arrived at any tenable theory as to how the acari arrived there.

No further observations being forthcoming from members, the PRESIDENT assured Mr. Duncan that the lack of discussion was due to the newness of the

subject, and not to any lack of interest. He then called upon Dr. Scott.

Dr. H. H. SCOTT said that when Professor Wooldridge offered him the privilege of occupying a short period of their time that afternoon, he felt that it was rather an impertinence to accept, because he could not come before them as a veterinarian, but merely as a humble pathologist, but he thought it would be a good opportunity of getting information, from those who were in a better position than himself, as to the prevalence in veterinary medicine and surgery of, the conditions he desired briefly to bring to their notice.

The first specimen was the intestine of a tiger that died of acute obstruction of the bowel. At autopsy there was an enormous distension of the gut and, situated 12 feet below the pylorus, there was an obstruction due to a big bone firmly impacted in the gut. This had promoted increasing and violent peristalsis and volvulus resulted. There was further, and in consequence, a tear in the mesentery, through which 13 or more feet of bowel had passed. The *post-mortem* revealed, too, the existence of extensive pyorrhœa, a great deal of periodontitis, and an abscess at the root of one of the canines. Conjecture was that the pain of biting on such a tooth as that had led the animal to bolt his food and swallow things whole, and that the bone had passed along to the point mentioned and had caused the obstruction.

His other specimens consisted of a series of congenital malformations of the kidney. They were said to be almost unknown amongst wild animals; in fact, one writer on that subject had stated that they were so rare as to be so, and ascribed them to in-breeding and domestication. Either that statement was erroneous, said Dr. Scott, or he (the speaker) had been singularly fortunate, for all the cases before them, but one, had occurred during the past six months.

The first specimen of the series was a case of hypoplasia—here was the left kidney, here the right, and the former was about normal size, so that there was no compensatory hypertrophy to be allowed for. The right was one-fourth the size of the left. In the next one—going a stage further—one had actual aplasia of the right kidney, while the left was not enlarged, or, if at all, only very slightly. This case occurred in a Mandarin duck. Where the kidney should have been there was present a little fibrous deposit. It was at first thought that this might be a remnant of the supra-renal, but microscopic examination did not reveal the presence of any supra-renal tissue at all. The next one showed the other extreme; here was a case of hyperplasia. The left kidney was divided into two, and each part had a distinct ureter, which did not unite with its fellow until just before entering the bladder. The other kidney was practically normal, so that there were three kidneys—two on the left and one on the right. Strange to say, one of the commonest abnormalities in human pathology—the so-called "fused kidney"—he had not yet found. The next abnormality exhibited was that of a cystic kidney. The right kidney was almost replaced by a huge cyst and, so far as one could determine, it was not a case of hypernephroma. Cystic kidney was nearly always double, but here (the next specimen) was an example, found in a snake in Sussex, where the right kidney was cystic practically throughout while the left kidney was normal. The next exhibit revealed a kidney in a state of cystic degeneration. Lastly they came to a condition which he had never previously seen, but it had been reported—he thought Rochet had recorded one case in a cat in Paris, and Ball had reported another. This was a case of a cystic condition of the kidney associated with cystic liver. One of the cysts had been cut open, to show that it was really a cyst. The liver was quite spongy, and showed cysts of varied size. It was rare to get the two organs similarly affected in this way, and some said that the condition in the liver was due to dilatation of the bile ducts, and that in the kidney to dilatation of the uriniferous tubules.

They had, therefore, a complete series, showing hypoplasia, aplasia, hyperplasia, monocystic kidney, polycystic degeneration, and the simultaneous occurrence of cystic kidney and cystic liver. He would like to know if it was true that these conditions were common amongst the domesticated animals.

The PRESIDENT: You have listened with the greatest interest I am sure—as I have—to these demonstrations by Dr. Scott and, as you have heard, he would like you to express your opinions and to discuss these exhibits in any way you feel disposed.

Major SIMPSON: I am afraid I cannot throw a great deal of light on the question, but from the experience of the post-mortems I have held I should consider that these conditions are comparatively rare in the domesticated animals. I should not like to advance any theories as to causation. I am sure we all feel that such a collection as have before us to-day could only be made once in a life-time: these exhibits are, indeed, most interesting. (Hear, hear.)

Mr. TAYLOR: I should like to ask Dr. Scott whether it would not have been possible to perform exploratory laparotomy on the tiger to find the cause of the obstruction.

Dr. SCOTT: It could have been done, but the tiger, strangely enough, showed no signs of ailing until two days before death.

Mr. COLLETT: In pigs I have met with cystic kidneys quite frequently. During the course of a day's inspection in the abattoir one used to see half a dozen or more cystic kidneys in swine, but that would represent about half a dozen in a thousand pigs. It is quite common to find one kidney nothing but a sac of water, and perhaps the other showing enormous cysts throughout its structure, and the peculiar thing is that the pigs prior to slaughter appeared perfectly healthy. I have not seen the condition in any other animal.

Dr. SCOTT: Would it be possible that the condition might have been hydatid infestation?

Mr. COLLETT: I am speaking of my experience abroad, and I did not meet with any hydatid disease until I came to this country.

Mr. J. WILLETT: Mr. Scott, in reply to Mr. Taylor, said that the tiger showed little pain, despite the volvulus. It occurred to me that it was remarkable that the animal, having so serious an abdominal trouble, should show so little pain. There was no evidence of colic?

Dr. SCOTT: None at all. The tiger seemed a little off his feed, that was all.

The PRESIDENT: With regard to the specimen of the tiger, I may say, in the first instance, that obstruction of the intestine by bones and other foreign bodies is not uncommon in the domestic carnivora, and in the case of bones in the majority of instances it is due to the fact of the bone being hurriedly swallowed for fear of another animal stealing it. I have never yet seen an instance in which a volvulus or other incarceration has occurred as a result of a foreign body. This is, in my experience, quite unique. In the dog—the young puppy in particular—volvulus is not rare, and it generally occurs as the result of some sudden unexpected movement, such as a fall downstairs, or the puppy falling out of its owner's arms, the owner making a hurried and ill-advised attempt to catch it, and consequently converting what would have been a harmless fall into a disastrous one, the puppy landing awkwardly. In this way a tear of the mesentery may occur, allowing a portion of the intestine to pass through. It is common in the equidae, and generally occurs at the end of the ileum, almost at the junction with the cæcum, and a loop of bowel passes through: you sometimes get a dozen feet through—as much as was met with in the case of this tiger. You may get a simple volvulus without a rupture of the mesentery in the horse, and also where a rent occurs and the bowel, passing through, gets tied into almost inextricable knots. You get each condition independently, and I have not met with a combination of these conditions in any individual case. In the tiger it was a triple condition, which has not come under my observation in the domesticated animal.

Concerning Mr. Taylor's question in regard to exploratory laparotomy, I agree with Dr. Scott that it was possible, but I would ask what possible good result could have been expected? Obviously none. It was not such a case as one meets with in the dog often enough, where symptoms are exhibited for several days before, and the veterinary surgeon discovers the obstruction and laparo-enterotomy is carried out. I have also been able to reduce volvulus in the dog with good results. I have never seen, as I have said, an instance of incarceration of the bowel through a rent in the mesentery, as a result of the presence of a foreign body in the small animal, and in the large animal it is inoperable. It was very interesting to get the association of this condition with the existence of pyorrhœa, but pyorrhœa of the domestic dog and cat is a very common affection, while swallowing of things of this kind appears not to be very common. I am not, therefore, at all disposed to think that that theory is likely to prove sound.

The kidney specimens are, I should say, unique, I may say that congenital conditions of the kidney of this kind must be rare in the domesticated animals, considering the infrequency with which one meets with them, bearing in mind the number of *post-mortem* examinations which we make. The cystic conditions of the kidney with which we meet are as a rule dilatations of the uriniferous tubules. You find them quite commonly in dogs with one kidney alone, and that no general ill effect on the health of the patient is observable. In those instances where we have got hydronephrosis you usually do find some hypertrophy of the other kidney, which has undertaken the double function. It is not an uncommon thing to find these conditions associated with small calculi. Cystic adenomata of the kidney do not appear to be common in the domesticated animals. The parasitic conditions frequently met with in the liver of the domesticated animals, more particularly the dog, are rarely associated with corresponding parasitic cysts in the kidney. The most common one found in the liver is the *Cysticercus tenuicollis*, and that in the pig.

Concluding, the PRESIDENT said that he thought it was quite possible that members would be glad to send to Dr. Scott any examples with which they met in the course of *post-mortem* examinations.

Dr. SCOTT: I shall be very glad indeed to have them.

Mr. MCINTOSH: It is my pleasant duty to accord in your name to the Council and Secretary of the Zoological Society our most cordial thanks for placing this building at our disposal to-day, and to Dr. Scott and Mr. Duncan for the most interesting demonstrations which they have given us. It is regrettable that on account of the inclemency of the weather the attendance has suffered somewhat, but I can assure them that their efforts have been very deeply appreciated. (Applause.)

The PRESIDENT: I should like to draw your attention to specimens exhibited by Dr. Vevers, for whose absence I have been asked by him to make apology to you to-day. Dr. Vevers had asked me if I thought they would be of interest to the meeting, and I thought that not only would they be, but that at the same time they would afford a good opportunity for showing you two other specimens bearing upon similar parasitism. One is the lining membrane of the gullet of the ox, utilised for sausage casings, and in this will be seen a considerable number of maggot-like bodies which are the larvæ of the *Hypoderma bovis*. The interesting thing in regard to them is as to how they get there, and that is still to some extent, a matter of conjecture. This specimen is one which has been previously exhibited at a meeting of the Central Veterinary Society by Colonel Dunlop Young. The other specimen shows the ravages of the larvæ of the warble fly upon the skin of the ox.

Professor Wooldridge outlined the various theories in regard to the mode in which it was surmised that

the larvæ gained their sites in this position in the late Spring or early Summer.

The hide, he proceeded, shows the punctures, but what is of interest to me is to see the nature of the holes on the reverse side; they look almost as though they were made by brace and bit, and if you look closely you will see that there are spiral markings which lead one to believe that the parasite revolves itself slowly in a regular fashion through the hide. It is for us, as far as we can, to try and exterminate these pests, the economic aspect of whose activities is so serious. This is not so difficult as it might at first appear, because the flies do not travel any distance, and they do not cross water.

I will now read you Dr. Vevers' notes on his specimens.

Exhibition of Œstridæ from Reindeer, by Dr. G. M. Vevers. Four reindeer (*Rangifer Farandus*) were imported into the Society's gardens in February, 1923, from Kajana, Finland. They arrived in poor condition and showed numerous "warbles" under the skin of the back. Two died of enteritis soon after arrival. Towards the end of April the larvæ of the two remaining animals began to work their way out, and were collected from among the droppings each morning. While in the subcutaneous tissues the larvæ were creamy white, but when they were collected they were glistening black in colour and resembled the droppings very closely. They pupated within twenty-four hours and remained in this stage for six weeks, at the end of which the flies emerged. These were found to be Ædemagena Farandi Lati. The larvæ of the smaller species (*Cephenomgia Trompe*) which lived in the frontal sinus were passed through the nostrils and collected at the same time. These also were pupated almost immediately, and the flies emerged from six to seven weeks later.

Continuing, the President said, I take it you would like to accord to Dr. Vevers similar thanks to that given to the other gentlemen who have come to show us their specimens. (Applause.)

Professor Wooldridge then spoke of the occurrence of bladder calculi in dogs, saying that last week he operated upon a Pekingese bitch, and took out two calculi, and the animal had since gone on very well. One stone was that produced, and the other, which was almost a duplicate, he gave to the veterinary surgeon who gave him the case. Two days previously Capt. Martin, of Christchurch, brought up a Sealyham bitch with bladder calculi. He (the speaker) operated on her on Wednesday, and he took from her two calculi of a shape he had never seen before. These were wedge-shaped; he had often seen them pyramidal. Capt. Martin had brought the bitch along, and perhaps members would like to see her and examine the operation wound. The chief symptoms were straining, incontinence, and hæmaturia, while of course there were enlargements which could be felt.

A MEMBER: Is she having anything to prevent their forming again?

The PRESIDENT: She is having hexamine and salicylates, but they are given chiefly as urinary antiseptics.

Mr. COLEMAN: I do not think I have reported this case yet. About two months ago I had a small Shetland dog brought to me with swelling on the right-hand side of the tail. I diagnosed it as a perineal hernia and, after shaving the surface, I made a radical incision in the skin. I took a piece of the rectum out, and made a purse-string suture. The wound healed up perfectly. The hernia was about as big as one's fist.

CORRESPONDENCE.

Reverting to the routine business of the meeting, which had been held over to this stage in the proceedings, the President called upon the Secretary to read the following correspondence:

(1) *Apologies for Absence* from Messrs. Austin, Baxter, Bull, Duncan, Hewer, Jagger, Jelbart, Lepper, Little, Trewin, and P. W. D. Smith.

(2) *Representatives to Council N. V.M. A.*—A letter was read from the Secretary of the "National" pointing out that under the Articles of Association the Division, which had previously appointed four representatives was, by virtue of its membership only entitled to two in addition to the Secretary. The Secretary stated that at the Annual General Meeting held at Reading the following were appointed: The President and the Secretary, Messrs. Male, Simpson, and J. Willett.

The President pointed out that, by virtue of his office as treasurer of the "National," his position would be unaffected by the withdrawal of his name, and after considerable discussion, the offer made by Mr. Simpson to withdraw his was accepted on the understanding that every effort should be made to ensure Major Simpson's return as a representative of the Central Division, the opinion being strongly and unanimously expressed that the Council of the "National" could not afford to dispense with his valuable services.

Messrs. G. P. Male and J. Willett, together with the Hon. Secretary (*ex-officio*) were then re-elected as the representatives of the Division. It should be mentioned that, in the course of the discussion, the view was very strongly expressed that all members of the Association, and, in particular, members of Council, should have been made aware of, and should have had the opportunity of adjudicating upon the change in the Articles which altered the basis of representation of Divisions upon the Council from one representative to every twenty-five members, to one for every fifty members. It was agreed, therefore, that the Secretary should convey this opinion to the Secretary of the "National" with a view to the matter being brought up for discussion at the next meeting of the Council of that body.

(3) A further letter from the Secretary of the "National" was considered requesting information as to the wishes of the Division in regard to membership by its representatives of any particular Standing Committees of the Association.

It was decided to make no representations in this matter.

(4) *From Mr. F. Bullock re The Garnett Memorial Fund.*

The PRESIDENT: I should like personally to bring this matter before the notice of the members of our Society in order that I may urge them to do all that they possibly can to support this fund practically, and that those who have not already done so will send along their contributions: for, depending upon the amount received, will be the decision as to the form the memorial shall take. I have to apologise, as your appointed representative, for being unable to attend the Royal Sanitary Institute Congress at Edinburgh, but, if I may say so, good may come out of evil, for possibly you will agree that the whole or part of the expenses thereby saved should be devoted to this fund.

Following some deliberation, it was decided that settlement of the question of a Divisional contribution should be held over to the next meeting, it being understood that in the meantime, the members should accord the fund their most hearty direct and indirect support.

ELECTION OF NEW MEMBER. Lieut.-Col. F. N. S. Baldrey, C.M.G., of Lambourne, was, on the proposition of Mr. G. P. MALE, seconded by Major CATMUR, unanimously elected a member of the Division.

NEXT MEETING. It was decided to hold the next meeting of the Division (on the last Friday in November) in London. This concluded the formal business of the meeting, but, prior to its dispersal,

MAJOR SIMPSON said: I think we ought to accord a very hearty vote of thanks to the President for the trouble he has taken in connection with our meeting here this afternoon. We are indebted to him in many ways, amongst them being his very interesting dissertation on the parasites and other specimens shown by Dr. Scott, for his own contribution to the clinical section of the proceedings, but most of all for his kindness in enabling us to be here, and in affording us such a very interesting day.

A vote of thanks was very heartily accorded and the company, joined by the ladies, proceeded to enjoy the hospitality of the President and subsequently, under his guidance, proceeded on the tour of inspection previously described.

ROBIN CATMUR,
Hon. Secretary.

VETERINARY SURGEON'S TRAGIC DEATH.

The Bradford Coroner held, on August 4th, an inquest on Mr. Hartley Feather (64), veterinary surgeon, of Hugill Street, Thornton, who was found dead, with his throat cut, in a cowshed on a farm at West Scholes.

The Coroner returned a verdct of "Suicide while of unsound mind."

ERRATA.

The second line on Page 680, of last week's *Record*, should read "in a more impersonal manner."

In the review of Mr. Gofton's Annual Report for 1924, published last week, paragraph 5, line 17, the word "Glasgow" should read "Georgie."

North Wales Division.*

A meeting of the North Wales Division was held at the British Hotel, Bangor, on Friday, July 31st, the President (Mr. E. P. Edwards, of Mold) presiding. There were also present Messrs. Booth, Cartwright, Hughes (Caerwys), Hughes (Mold), Jones (Towyn), H. L. Jones (Denbigh), W. O. Jones (Llanrwst), Lewis, Matthews, Montgomerie, Salisbury, Savage, Roberts, Thomas, Trevor Williams, Williams, Wynn Lloyd, and Wynne.

Visitors.—Messrs. Barker (Hereford), Hughes (Welshpool), Kendrick, McLean.

CORRESPONDENCE.

Apologies for absence were received from Messrs. Gofton, Howard-Jones, Cane, J. C. Rowlands and R. S. Rowlands.

The SECRETARY reported the receipt of a letter from the National Veterinary Medical Association which stated that the Council of the Association had had under consideration the following resolution, sent to them by the Western Counties Division:—

"We consider that the time has arrived when veterinary surgeons should be paid an adequate fee for attendance at dog shows." The replies received from the Divisions showed great diversity of opinion on the subject and the Council decided that the Association take no action in the matter.

The PRESIDENT explained that the subject had been widely discussed in the *Veterinary Record*.

Mr. JONES (Towyn) thought individual members should make their own individual arrangements and decide the fees for themselves. He moved a resolution to that effect.

Mr. BOOTH (Colwyn Bay) seconded the motion, which was carried.

A letter was read from Mr. A. E. West, of the Victoria Veterinary Benevolent Fund, stating that he was anxious to interest the members of the Division in the fund.

The PRESIDENT mentioned that he had subscribed and no doubt the letter would jog the memories of any member who had not.

A letter was received, conveying Major General Sir John Moore's proposal that there should be created and established in Great Britain a Veterinary Research Council adequate to meet the demands of the veterinary profession; also that its status should be similar to that of the Medical Research Council, with the difference that it should function through the Development Commissioners.

The PRESIDENT remarked that the matter was most important. While medical research bodies had been set up all over the country, the need of such a body of veterinary surgeons had been ignored. It was time veterinary surgeons asserted themselves as a profession and showed they were willing to undertake research work themselves. There was no need to remind them of the recent body set up for research into the cause of distemper in dogs, but the members

*Received on August 8th.

of that body were not, in the main, members of the veterinary profession. They should endeavour to persuade the Government that they were competent within their own sphere to carry out research among animals and the resolution had that in view.

Mr. JONES (Towyn) moved that the resolution be supported. Seconded by Mr. MATTHEWS, this was carried.

FrankGarnett Memorial Fund.

It was decided to subscribe £5 5s. 0d. towards the Frank Garnet Memorial Fund.

Mr. MATTHEWS inquired what form the memorial would take.

The PRESIDENT: I have seen nothing on that point up to now. It will, I should think, depend on the amount of money obtained, but it will certainly be an object which will commemorate the nobility of Mr. Garnett's character.

Mr. MATTHEWS said he hoped a scholarship for research would be provided.

Annual Congress.

Attention was called to the annual congress of the Association at Cambridge, on August 17th to the 22nd.

The SECRETARY reported upon the efforts he had made to obtain cheap railway tickets. Before they were available there must be a minimum of 200 passengers.

The PRESIDENT hoped everyone possible would attend. They were looking forward to a bumper congress.

PROPOSED JOINT CONFERENCE.

A discussion took place on the proposed Joint Conference with the North Wales Division and the North Wales Branch of the British Medical Association.

The PRESIDENT said he understood that the last conference between the two Associations at Chester was most successful. These gatherings undoubtedly helped to bring the two professions closer together.

Mr. JONES (Towyn) said that Dr. Lewys Lloyd, on behalf of the Medical Association, suggested that both bodies might discuss the administration of the Tuberculosis Order from different points of view.

Mr. Ll. JONES (Denbigh) thought the owners of cattle should be represented at the conference. Their point of view should be heard.

The SECRETARY, in answer to a member, explained that under the Order the Veterinary Inspector would make the post-mortem, but the owner might be present. or be represented by a veterinary surgeon or some other person.

Mr. JONES (Towyn) thought the Farmers' Union should be asked to send representatives to the Conference.

The PRESIDENT did not know whether, under the new Order, fees were fixed and it seemed rather early to invite outside people. The two professional bodies had not yet discussed the *pros.* and *cons* of the Order and it was early to invite the laity to express their views. The Conference was, moreover, bound to be of a technical character. If the question of fees was to be discussed it would be unwise to have the farmers present at that early date.

Mr. JONES (Towyn): I do not think fees will come up for discussion.

Mr. BOOTH (Colwyn Bay) did not think any good purpose would be served by inviting farmers to the meeting.

Mr. JONES: I think we should co-operate with the farmers. It will be much more satisfactory if we get their sympathy.

Mr. BOOTH remarked that they could not entirely eliminate agriculture. If many cows were destroyed in a particular area, then the question of the milk supply of that area assumed serious importance.

Mr. LL. JONES (Denbigh) thought they might ask the Medical Profession whether they objected to the presence of representatives of the agriculturists.

The SECRETARY said that, after all, the Order must be administered as it was framed.

Mr. WYNN LLOYD asked if they had authority to invite the farmers?

The PRESIDENT said the form of the subject to be discussed was left to the Association.

Eventually it was decided to discuss simply the question of the Administration of the Tuberculosis Order and not to invite the farmers, and that the Conference be held at Chester or Wrexham, on September 25th, subject to the approval of the Medical Association.

Mr. TREVOR WILLIAMS (Llangefni) thought other subjects should be discussed, such as the question of meat inspection. In regard to this, the veterinary surgeon had been practically ignored and the sanitary inspector was established as firmly as ever.

A MEMBER: We do not object to medical men, but we object to sanitary inspectors doing the work.

Mr. TREVOR WILLIAMS: The sanitary inspector is appointed as a kind of sub-officer to the medical man and the latter will receive no increased salary even if he inspects the meat.

Mr. MATTHEWS agreed that they should press their point of view with regard to the inspection of meat. If any man was qualified to inspect meat it was the veterinary surgeon.

Mr. LLEWELLYN JONES: The longer we take this matter lying down the longer we will suffer.

Mr. MONTGOMERIE said they should know exactly how they stood and should have clear cut ideas before they discussed this matter with the medical profession.

Mr. TREVOR WILLIAMS moved that a letter be sent to the County Councils of North Wales urging upon them the necessity of veterinary surgeons being appointed to inspect markets.

Mr. WYNN LLOYD seconded the motion, which was carried.

Mr. WYNN LLOYD thought the attention of the Ministry of Agriculture should be called to the number of markets in North Wales which are not inspected.

The PRESIDENT said that some years ago, when no inspection of the markets took place in Flintshire, a letter was sent to the Board of Agriculture, asking whether it was not necessary. Their reply was that

it was advisable, but that they had no power to impose their will on the County Council.

The SECRETARY: All County Councils had been urged to make provision for the regular inspection of markets.

The SECRETARY reported the receipt of a letter from the Education Committee of the Council of Agriculture for Wales, in regard to a proposal to establish a school of veterinary medicine within the Welsh University and asking the views of the Association.

The SECRETARY explained that he sent the letter to the Council of the National Veterinary Association for their views and they replied that in their opinion "the provision of further facilities in the Principality for the training of students in veterinary medicine is neither desirable or practicable." The Royal College of Veterinary Surgeons had furnished statistics of the number of students at the College giving Welsh addresses, since 1910, and they also expressed the opinion that the establishment of a school of veterinary medicine in Wales was neither necessary nor desirable. There were five schools affiliated to that College capable of producing 200 graduates per annum, while the number of graduates required to replace vacancies caused by death was not more than 70 per annum. In the two years 1923—24 no fewer than 321 new graduates were registered. This was sufficient proof that the existing veterinary colleges were able to train more than twice the number of surgeons necessary to retain the register at its present number.

Mr. WYNN LLOYD said the Secretary was to be praised for getting the opinion of head-quarters. Personally he would like to see the existing schools scrapped and one central school established at Cambridge. Nothing was gained by the multiplication of schools, but everything was to be gained by centralisation.

The Secretary and Mr. Montgomerie were asked to draft a suitable reply to the Council of Agriculture for Wales.

SCALE OF FEES.

Mr. H. MORRIS SALISBURY (Corwen) moved that it was desirable for a scale of fees to be arranged for visits, the commoner operations, etc. Of course he did not want a scale which was to be rigidly adhered to, but which might be the minimum.

Mr. JONES (Towyn): Do you mean a scale for public or private work?

Mr. SALISBURY: Private work.

Mr. JONES: Then I do not think you ever will arrive at an agreement. It all depends on the skill of the practitioner and other factors such, for instance, as competition.

Mr. BOOTH said another factor was the experience of the practitioner. Ten years hence the younger members would be able to satisfy themselves as to fees.

Mr. SALISBURY: Other Divisions had discussed the question and I thought we might do so.

Mr. BOOTH: We have read of the question of fees being discussed, but have we ever read of them being fixed and adhered to?

Mr. SALISBURY: Yes, a scale was fixed by one Midland Division.

Mr. BOOTH: But was it adhered to?

Mr. MATTHEWS said there was a good deal to be said for Mr. Salisbury's point of view. There should be some guide for the younger men. Mr. Salisbury might draw out a list of operations, diseases, etc. for which a certain charge might be made.

Mr. TREVOR WILLIAMS stated it was hopeless discussing the matter without details.

The discussion was adjourned to the next meeting to be held in November at Colwyn Bay and Mr. Salisbury was asked to specify operations and diseases for which a scale might be adopted.

A GRIEVANCE REMEDIED.

The SECRETARY stated that a letter was received from Professor R. G. White, head of the Agricultural Department of the University College of North Wales, stating that he read with interest the correspondence in the *Veterinary Record*, which bore on the general question of making the results of the work of Mr. Montgomerie, Veterinary Adviser at the University College, available to farmers. It was obvious that there were many difficulties, but while they were bound to keep the interests of the agricultural industry in the foreground, they were most anxious not to do anything which might even remotely injuriously affect the veterinary profession and in fact they were most anxious that Mr. Montgomerie's work should help the profession as well as the farmer. Under the circumstances he suggested a round table conference.

The PRESIDENT explained that the round table conference was held and they had a long and frank discussion in so far as the work of the Agricultural department at the University College of North Wales affected, or might affect, the general practitioner in North Wales. The representatives of the veterinary profession ventilated their views very fully and without reserve. The discussion ultimately focussed upon a revision of the text of a pamphlet the department were issuing, explaining its work and scope and the Committee, as representing the University and the County Council members present, agreed to every alteration, addition, and revision the veterinary representatives made to the pamphlet. I think, added the President, that we as general practitioners in North Wales, whilst earnestly desiring to give whole hearted support to the Research department established at Bangor, can only co-operate with the Department so long and so far as its system does not trench upon or prejudice our interests and our professional relations with our clients. I cannot personally help but feel that the ground, as between the veterinary adviser of the Department and the general practitioner, is very delicate ground, requiring tact, good will and a liberal outlook, but I have every confidence that now the subject has been ventilated and the air cleared, we

will be able to work amicably and to mutual advantage with the Department. (Hear, hear).

There are certain and well known rules of etiquette which prevail as between neighbouring practitioners. The Advisory Officer of the Department, in virtue of an appointment covering the whole of North Wales, may be regarded as a neighbouring practitioner by every practitioner within the area and so long as the ordinary professional etiquette of neighbours is strictly maintained, friction should be absent. (Hear, hear).

They came away from the meeting feeling that they had done a good afternoon's work. They arrived at a *modus vivendi*. He suggested that in future a Committee of the Association should be furnished with a copy of any pamphlets, so that if necessary they could be revised so that the interests of the practitioner would be safeguarded. Their idea was to prevent the farmer becoming a quack.

Mr. Trevor Williams (Llangefni) moved a resolution approving of what the Association's representatives had done and also that a small committee should be appointed to revise future pamphlets issued by the department which concerned the profession.

Mr. Booth (Colwyn Bay) seconded and the President and the Secretary were appointed to act while they remain in office with Mr. Matthews (Llanfair).

President's Address.

The President: The next item on the agenda is "Address by the President," but I do not intend, in view of the "metal more attractive" which is before us in the shape of Mr. Barker's demonstration and paper, to take up any of our time, but I do want to thank you very much for the honour you have done me in re-electing me as President for the present session.

I am very conscious of having been a very poor President last year as, owing to illness, I was only able to be present at one meeting and I want to thank you all for your kindness and forbearance toward me, and especially to thank those who undertook my duties, particularly our Hon. Secretary, Mr. Wynne, for his unfailing kindness and guidance. I am glad to think that the average attendance during the 1924 session was higher than it had been for many years and I trust with your hearty co-operation we may have a record for the present year.

The year 1924 was marked by several features of great importance to the future of the profession, such as the completion of the re-organisation of the National Association, and the establishment of the Comparative Section of the Medical Research Council, with Major Hobday as its President. This, also, is a great stride forward in the direction of our profession taking its right place with respect to research in the diseases of animals. Then, again, for the first time in our history, the Government has taken a belated, but welcome, paternal interest in our body to the extent of granting money for the establishment of Research centres at Cambridge, London, Glasgow and Edinburgh, and we in North Wales have also been glad to welcome a similar research and advisory centre at Bangor University. All these things, I feel sure, will bear great fruit in the future. I am glad to see such a good number here to-day and I trust we shall have bumper attendances at the remaining two meetings of the session.

By kind invitation of the President, tea was provided; afterwards Mr. J. R. Barker (Hereford) demonstrated the treatment of three cows affected with Sterility, and he exhibited several very interesting specimens of Lesions of the Fœtal Membranes. As the time was getting on and several members had a very long way to go it was decided to adjourn the discussion of Mr. Barker's paper till the next meeting at Colwyn Bay.

On the motion of the President, seconded by Mr. W. Hughes, a very hearty vote of thanks to Mr. Barker was passed.

J. H. Wynne, *Hon. Secretary.*

(Mr. Barker's paper is reproduced elsewhere in this issue.—Ed.)

NOTES AND NEWS.

The Tuberculosis Order.

At a meeting of the Morayshire Farmers' Club, held at Elgin, on July 24th, it was unanimously agreed to protest against the Tuberculosis Order (1925) coming into operation on September 1st.

In this connection, a letter was read from the County Clerk (Mr. E. D. Jameson) stating that the Public Health Committee had resolved to protest against the Order in question, on the ground that it was inopportune. The letter further stated that the matter had been fully discussed, and the Committee considered that its effect would be that very few of the existing dairies in the county would be able to carry on, and that it would have the effect of decreasing the supply and raising the price of milk.

Mr. F. W. Wishart, Westfolds, said that the Morayshire Dairy Association welcomed the coming into force of the Act, not only in the interests of the dairy farmer, but also in the interests of public health. It would at least ensure that there would be no chance of infection of tuberculosis from the bovine to the human.

The Chairman said that he was glad to see Mr. Wishart backing up the Government, seeing that it would do a great deal of good. He thought that the farmers should be able to buy their animals from Irish sellers on test in this country and that it ought to be compulsory to sell the animals with the test.

The club, as stated, decided to support the Public Health Committee's resolution protesting against the Act in question coming into force on the date named.— *Aberdeen Press and Journal.*

Official Test of Dr. Shaw's Foot-and-Mouth Vaccine.

"Farmers who suffered the loss of their herds by the epidemic of foot-and-mouth disease which raged over

Cheshire in 1923-4, and who had hoped that preventive treatment had been found by Dr. Shaw, will," says the *Manchester Evening Chronicle*, of July 27th, "be disappointed by the results of an official test which was concluded at the week-end.

"The test of Dr. Shaw's remedy was arranged, with the sanction of the Ministry of Agriculture, by the National Farmers' Union, and took place at the new Government testing station at Pirbright, Surrey. The test was made at 4 p.m. on Thursday last in the presence of Mr. German, ex-President of the Farmers' Union, Captain Watts, veterinary inspector of the Ministry of Agriculture, and Mr. George Thomason, farmer, of Wrenbury, Nantwich, who has previously inoculated with Dr. Shaw's preventive animals which he selected at the testing station.

"Mr. Thomas Wilson, M.R.C.V.S., of Nantwich, at the request of the National Farmers' Union, examined the animals at the conclusion of the test.

"Mr. Wilson in his report prepared on Saturday, states—'On Wednesday, July 15, 1925, two healthy roan heifers (ear-marked and numbered), selected by Mr. Thomason, were inoculated by him with Dr. Shaw's foot-and-mouth disease preventive. On Monday, July 20, these two animals, and also another, a blue roan heifer (ear-marked, No. 4) and which had not been inoculated with Dr. Shaw's remedy but used as a control, were infected with the virus of foot-and-mouth disease, each animal receiving an intramuscular injection of 2½ c.c. of an emulsion of epithelium, etc., from the tongue of a beast suffering from foot-and-mouth disease.'

"Mr. Wilson reports that on the 23rd, when he examined the animals which were identified by Mr. Thomason as those he had inoculated, all were showing well-marked symptoms of foot-and-mouth disease, lesions being present both in the mouth and the feet.'

"Mr. Wilson, concluding his report, writes:—'I consider this test has been done satisfactorily, and, in my opinion, proves conclusively that the inoculation of Dr. Shaw's remedy as a preventive of foot-and-mouth disease is useless, and that considerable damage could be done by stock owners failing to report immediately cases of foot-and-mouth disease and endeavouring to stop the spread of an outbreak by this alleged preventive.'

"Copies of Mr. Wilson's report are being sent to the Ministry and to the Farmers' Union."

Complaints are being made of the failure of many Wiltshire dairy farmers to fill up and return the milk forms, this year showing a decrease of 384 in the number returned in the county. It is declared that in many cases members of the N.F.U. absolutely refuse to fill up the forms and send them in. Those with small holdings are the greatest sinners, and the blame for the large decrease is placed upon their shoulders.

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